ABB Drives

User's Manual
LonWorks® Adapter Module
FLON-01

LONWORKS® Adapter Module
FLON-01

User's Manual

3AUA0000041017 REV A EN

EFFECTIVE: 01.12.2008

© 2008 ABB Oy. All Rights Reserved.

Safety instructions

Overview

This chapter states the general safety instructions that must be followed when installing and operating the FLON-01 LonWorks® Adapter module.

The material in this chapter must be studied before attempting any work on, or with, the unit.

In addition to the safety instructions given below, read the complete safety instructions of the specific drive you are working on.

General safety instructions

WARNING! All electrical installation and maintenance work on the drive should be carried out by qualified electricians.

The drive and adjoining equipment must be properly earthed.

Do not attempt any work on a powered drive. After switching off the mains, always allow the intermediate circuit capacitors 5 minutes to discharge before working on the frequency converter, the motor or the motor cable. It is good practice to check (with a voltage indicating instrument) that the drive is in fact discharged before beginning work.

The motor cable terminals of the drive are at a dangerously high voltage when mains power is applied, regardless of motor operation.

There can be dangerous voltages inside the drive from external control circuits even when the drive mains power is shut off. Exercise appropriate care when working on the unit. Neglecting these instructions can cause physical injury or death.

Table of contents

Safety instructions ***5***

Overview 5
General safety instructions 5

Table of contents ***7***

Introduction ***13***

Intended audience 13
Before you start 13
What this manual contains 13
Further information 14

Overview ***15***

Overview 15
The LonWorks® system 15
The FLON-01 LonWorks® Adapter module 16
Compatibility 17
Delivery check 18

Mechanical installation ***19***

Mounting 19

Electrical installation ***21***

Overview 21
General cabling instructions 21
Network connection 22
Bus termination 22
Earthing the LonWorks® cable screens 23

Drive/bypass configuration 25

Overview 25
Drive/bypass configuration 25
Control locations 30

Communication 31

Overview 31
General 31
LonMark® objects 32
Node object 32
Variable speed motor drive object 33
Open loop actuator object: DigitalCommand 35
Open loop sensor object: DigitalStatus 35
Open loop sensor object: DigitalInput 36
Open loop sensor object: DigitalOutput 36
Open loop actuator object: AnalogCmd 36
Open loop sensor object: AnalogStatus 37
Resource files 38

Network variables 39

Supported input network variables 39
nviAnlgCmd1 ... nviAnlgCmd8 41
nviCtlOverrideCm 42
nviDigCmd1 ... nviDigCmd12 43
nviDrvProcStpt 44
nviDrvSpeedScale 45
nviDrvSpeedStpt 46
nviEmrgOverride 47
nviExt1Ext2Ctrl 48
nviLocLock 48
nviRequest 49
nviResetFault 50
nviRunEnable 51
nviSavePars 51
nviStartEnable1 52

nviStartEnable2 52
Supported output network variables 53
nvoAccelerating 56
nvoAlarm 57
nvoAnlgInput1 ... nvoAnlgInput8 58
nvoAnlgOutput1 ... nvoAnlgOutput8 59
nvoAnlgSts1 ... nvoAnlgSts8 60
nvoAtReference 61
nvoBypKwh_R 62
nvoBypRunHours 63
nvoBypTemp 64
nvoCtlOverrideSt 65
nvoDecelerating 66
nvoDigInput1 ... nvoDigInput12 67
nvoDigOutput1 ... nvoDigOutput12 68
nvoDigSts1 ... nvoDigSts12 69
nvoDrvCurnt 70
nvoDrvDCBus 71
nvoDrvKwh_NR 72
nvoDrvKwh_R 73
nvoDrvPwr 74
nvoDrvRunHours 75
nvoDrvSpeed 76
nvoDrvTemp 77
nvoDrvTorque 78
nvoDrvVolt 79
nvoEmrgOvrdStat 80
nvoEnabled 81
nvoExt1Ext2Stat 82
nvoFaultCode 83
nvoFaulted 84
nvoForward 85
nvoFreqAct 86
nvoLimit 87
nvoLineUVVolt, nvoLineVWVolt, nvoLineWUVolt 88
nvoLineVolt 89
nvoLocRemStat 90
nvoMtrRevCntM 91

nvoMtrTemp 92
nvoNetCtrl 93
nvoNetRef1 94
nvoNetRef2 95
nvoParReadValue 96
nvoPid1Dev, nvoPid2Dev 97
nvoPid1Fbk, nvoPid2Fbk 98
nvoReady 99
nvoReverse 100
nvoRunning 101
nvoSpeedActRpm 102
nvoStarted 103
nvoStatus 104
nvoZeroSpeed 105
Supported network configuration properties 106
SCPTdefScale / nciDrvSpeedScale 109
SCPTlocation / nciLocation 109
SCPTmaxRcvTime / nciAnlgRcvHrtBt 110
SCPTmaxRcvTime / nciDigRcvHrtBt 111
SCPTmaxRcvTime / nciVsmdRcvHrtBt 112
SCPTmaxSendTime / nciAnlgSndHrtBt 113
SCPTmaxSendTime / nciDigSndHrtBt 114
SCPTmaxSendTime / nciVsmdSndHrtBt 115
SCPTmaxSetpoint / nciMaxSpeed 116
SCPTminSendTime / nciAnlgMinOutTm 117
SCPTminSendTime / nciDigMinOutTm 118
SCPTminSendTime / nciVsmdMinOutTm 119
SCPTminSetpoint / nciMinSpeed 120
SCPTnomFreq / nciNmlFreq 121
SCPTnomRPM / nciNmlSpeed 122
SCPTrampDownTm / nciRampDownTm 123
SCPTrampUpTm / nciRampUpTm 123
UCPTbypRunDelay / nciBypRunDelay 124
UCPTdrvCurntLimit / nciDrvCurntLimit 124
UCPTparReadIndex / nciParReadIndex 125
UCPTparValue / nciParWriteValue 125
UCPTparWriteIndex / nciParWriteIndex 126
UCPTpid1DerFiltTime / nciPid1DerFiltTi,

UCPTpid2DerFiltTime / nciPid2DerFiltTi 127
UCPTpid1DerTime / nciPid1DerTime,
UCPTpid2DerTime / nciPid2DerTime 128
UCPTpid1Gain / nciPid1Gain, UCPTpid2Gain / nciPid2Gain 129
UCPTpid1IntTime / nciPid1IntTime,
UCPTpid2IntTime / nciPid2IntTime 130
UCPTstopLevel / nciStopLevel 131
UCPTstopMode / nciStopMode 132

Diagnostics 133

LED indications 133

Definitions and abbreviations 135

Technical data 139

FLON-01 139
LonWorks® network 140

Introduction

Intended audience

The manual is intended for the people who are responsible for commissioning and using an FLON-01 LONWORKS® Adapter module. The reader is expected to have a basic knowledge of electrical fundamentals, electrical wiring practices and how to operate the drive.

Before you start

It is assumed that the drive/bypass is installed and ready to operate before starting the installation of the extension module.

In addition to conventional installation tools, have the drive/bypass manuals available during the installation as they contain important information not included in this manual. The manuals are referred to at various points of this document.

What this manual contains

This manual contains information on the wiring, configuration and use of the FLON-01 LONWORKS® Adapter module.

Safety instructions are featured in the first few pages of this manual.

Overview contains a short description of the LONWORKS® system and the FLON-01 LONWORKS® Adapter module, and a delivery checklist.

Mechanical installation contains placing and mounting instructions for the module.

Electrical installation contains the wiring instructions.

Drive/bypass configuration explains how to program the drive/bypass before the communication through the adapter module can be started.

Communication contains a description of how data is transmitted through the FLON-01 module.

Network variables presents the network variable list of the FLON-01.

Diagnostics explains how to trace faults with the status LEDs on the FLON-01 module.

Definitions and abbreviations

Technical data contains information on physical dimensions, configurable settings and connectors of the module and the specification of the fieldbus link.

Further information

Further information is available on the Internet from **www.lonmark.org** and **www.echelon.com**.

Overview

Overview

This chapter contains a short description of the LONWORKS® system and the FLON-01 Adapter module, and a delivery checklist.

The LONWORKS® system

The LONWORKS® system is an open serial communication solution that enables data exchange between all kinds of automation components.

A LONWORKS® network consists of intelligent devices, called nodes, connected by one or more communications media that communicate with one another using the LonTalk® protocol. A LONWORKS® network can consist of up to 32385 nodes divided into 255 subnets (127 nodes/subnet). Nodes are programmed to send messages to one another in response to external events or messages they receive. Each intelligent device, for example a programmable thermostat in a building control system, is a LONWORKS® node. A node is connected to other nodes with appropriate communications media, such as twisted pair cable, RF link, or power line circuit.

Each node includes a physical interface, *transceiver,* that interfaces with the communication media. The FLON-01 module uses the FT-X1 Free Topology Transceiver (compatible with FTT-10A transceiver) from Echelon Corporation. This is the most commonly used twisted-pair media in building automation and this architecture supports star, bus, and loop wiring. The FT-X1 transceiver connects to a twisted pair cable with a baud rate of 78 kbit/s and appears as a high impedance to the network when unpowered, hence it does not interfere with the network communications when powered down.

LONWORKS® nodes are objects that respond to various inputs and that produce desired outputs. Connecting the inputs and outputs of these network objects enables the network to perform specific tasks.

While the function of any particular node may be quite simple, the interaction among nodes enables a LONWORKS® network to perform complex tasks. A benefit of LONWORKS® networks is that a small number of common node types may perform a broad spectrum of different functions depending on how they are configured and connected.

The FLON-01 LONWORKS® Adapter module

The FLON-01 LONWORKS® Adapter module is an optional device which enables the connection of an ABB drive or E-Clipse Bypass to a LONWORKS® network. Through the FLON-01 LONWORKS® Adapter module, it is possible to:

- give control commands to the drive/bypass (Start, Stop, Run enable, etc.)
- feed a motor speed or frequency reference to the drive
- give a process actual value or a process reference to the PID controller of the drive
- read status information and actual values from the drive
- change drive parameter values
- reset a drive fault
- control other LONWORKS® nodes.

The network variables and functions supported by the FLON-01 LONWORKS® Adapter module are discussed in chapters *Drive/ bypass configuration*, *Communication* and *Network variables*.

The adapter module is mounted into an option slot on the motor control board of the drive or bypass. See the drive documentation for module placement options.

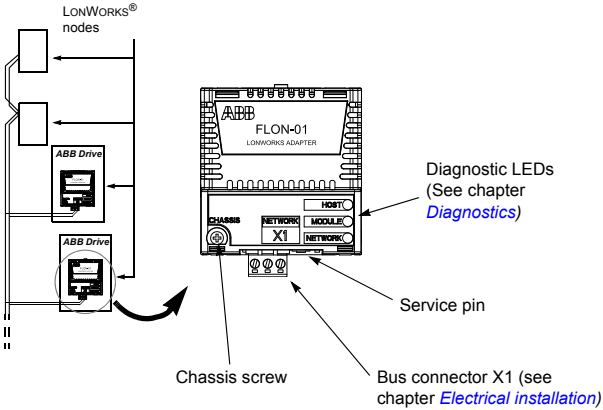


Figure 1. The construction of the LONWORKS® network and the FLON-01 Adapter module.

Compatibility

The FLON-01 interoperates with all LONWORKS® devices.

Note: LONWORKS® supports a variety of media. The FLON-01 supports TP/FT-10 media. A LONWORKS® router would be required for the FLON-01 to interoperate with devices on other media.

Delivery check

The option package for the FLON-01 LONWORKS® Adapter module contains:

- LONWORKS® Adapter module, type FLON-01
- this manual.

Mechanical installation

WARNING! Follow the safety instructions given in this manual and the drive documentation.

Mounting

The FLON-01 is to be inserted into its specific position on the drive or bypass. The module is held in place with plastic pins and one screw. The screw also provides the earthing of the fieldbus cable shield connected to the module.

On installation of the module, the signal and power connection to the drive/bypass is made through a 20-pin connector. (The connector on the controlled equipment may have fewer pins as not all available signals are necessarily used.)

Mounting procedure:

- Insert the module carefully into its position on the drive/bypass.
- Fasten the screw.

Note: Correct installation of the screw is essential for fulfilling the EMC requirements and for proper operation of the module.

Electrical installation

Overview

This chapter contains:

- general cabling instructions
- instructions for bus termination
- instructions for connecting the module to the LONWORKS® network.

WARNING! Before installation, switch off the drive/bypass power supply. Wait five minutes to ensure that the capacitor bank of the drive/bypass is discharged. Switch off all dangerous voltages connected from external control circuits to the inputs and outputs of the drive/bypass.

General cabling instructions

Arrange the bus cables as far away from the motor cables as possible. Avoid parallel runs. Use bushings at cable entries.

Network connection

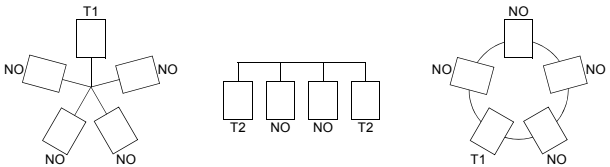
The bus cable is connected to terminal block X1 on the FLON-01.

X1		Description
1	SHLD	RC-filtered connection to the module ground
2	NET A	Network Connection A*
3	NET B	Network Connection B*

*For the LONWORKS® TP/FT-10 topology, either network connection may be connected to either pin.

Bus termination

The bus line is terminated with resistors connected between the network cable conductors A and B when the FLON-01 module is at the end of the bus. Termination prevents signal reflections from the bus cable ends.



T1	52.5 ohm termination at one of the nodes in one bus segment
T2	105 ohm termination at both ends of the line
NO	No termination

Figure 2. Bus termination for different network topologies.

Earthing the LonWorks® cable screens

The LonWorks® cable screen can be directly earthed at one station only. At other stations the screen should be earthed via an RC filter.

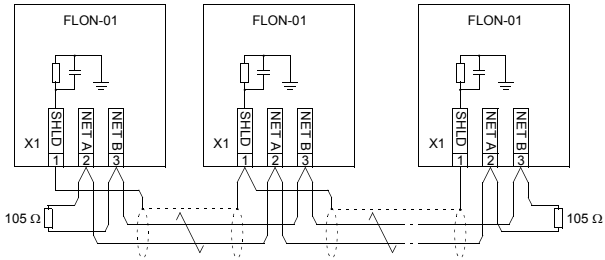


Figure 3. Network cable connection for bus topology.

Drive/bypass configuration

Overview

This chapter gives information on configuring the drive or bypass for communication through the FLON-01 LONWORKS® Adapter module.

Note: The FLON-01 cannot control the drive/bypass before it is configured for the LONWORKS® network. The LONWORKS® communication configuration does not require parametrisation of the drive/bypass. The LONWORKS® network is configured using a network installation tool. Please refer to the installation tool documentation for network configuration and to chapter *Communication* for the resource files.

Drive/bypass configuration

It is preferable to configure the drive/bypass before the FLON-01 is configured for the network. The reason for this is that the FLON-01 reads several parameter values from the drive/bypass in order to operate correctly and in order to select different modes. Furthermore, some of the configuration network variable values receive their defaults from the drive/bypass. The drive/bypass control location parameters should also be set accordingly to enable full and logical operation of the FLON-01. See chapter *Drive/bypass parameter settings*.

FLON-01 information parameters		
Fieldbus par. no.	**Parameter name**	**Description**
1	MODULE TYPE	Type of the module (LonWorks)
2	NODE STATE	State of the FLON-01
3-8	NEURON ID [5...0]	Neuron® chip ID
9	NODE ADRESS 1	ID of the node within this subnet
10	NODE SUBNET 1	Subnet (1) to which the node belongs
11-16	DOMAIN ID 1 [4...0]	Domain ID in a LonWorks network
17	NODE ADRESS 2	ID of the node within this subnet
18	NODE SUBNET 2	Subnet (2) to which the node belongs
19-24	DOMAIN ID 2 [4...0]	ID in a LonWorks network
25	XMIT ERRORS	Number of CRC errors
26	TRANS TIMEOUTS	Number of transmission failures

Note: These parameters become visible in the drive only after the FLON-01 has been configured on the network side.

MODULE TYPE

Explanation:

Shows the module type as detected by the drive/bypass. The value cannot be adjusted by the user. (If this parameter is undefined, the communication between the drive and the module has not been established.)

NODE STATE

Explanation:

Contains the current state of the network interface. Configured on-line is the normal run-time mode and means that the node is commissioned and on-line on the network. Soft/Bypass/Hard

off-line means that the node is not participating actively on the network.

The byte has the following bit assignments:

B	x	x	x	M	S	S	S

B = bypass
x = not used
M = mode
S = state.

Bxxx	**MSSS**	**State**
xxxx	x011	Unconfigured – without application
xxxx	x010	Unconfigured – with application
xxxx	x110	Configured – hard offline
0xxx	1100	Configured – soft offline
1xxx	1100	Configured – bypass offline
0xxx	0100	Configured – offline

NEURON ID

Explanation:

Displays the Neuron® chip ID of the module in decimal format. The ID is determined by the chip and cannot be changed.

Par. 3: NEURON ID [5] = byte 6 of the unique Neuron ID (MSB)

Par. 4: NEURON ID [4] = byte 5 of the unique Neuron ID

Par. 5: NEURON ID [3] = byte 4 of the unique Neuron ID

Par. 6: NEURON ID [2] = byte 3 of the unique Neuron ID

Par. 7: NEURON ID [1] = byte 2 of the unique Neuron ID

Par. 8: NEURON ID [0] = byte 1 of the unique Neuron ID (LSB)

The decimal values of the parameters are converted to Neuron ID as shown by this example:

Parameter 3 = 4 = 04h
Parameter 4 = 118 = 76h
Parameter 5 = 213 = D5h

Parameter 6 = 244 = F4h
Parameter 7 = 1 = 01h
Parameter 8 = 0 = 00h

These decimal parameter values yield a Neuron ID of 0476D5F40100h.

NODE ADRESS 1

Indicates the ID of the node within the subnet.

Range:

1-127 (0 = node address 1 not assigned).

NODE SUBNET 1

Explanation:

Indicates to which subnet the node belongs.

Range:

1-255 (0 = node subnet 1 not assigned).

DOMAIN ID 1

Explanation:

Indicates the ID of the domain within this subnet. Each domain in a LonWorks® network has a unique ID of 0, 1, 3 or 6 bytes in length. If the ID is shorter than 6 bytes, it is left justified in this field.

DOMAIN ID 1 [5] = byte 6 of the domain ID (MSB)

DOMAIN ID 1 [4] = byte 5 of the domain ID

DOMAIN ID 1 [3] = byte 4 of the domain ID

DOMAIN ID 1 [2] = byte 3 of the domain ID

DOMAIN ID 1 [1] = byte 2 of the domain ID

DOMAIN ID 1 [0] = byte 1 of the domain ID (LSB)

NODE ADRESS 2

Explanation:

Indicates the ID of the node within this subnet.

Range:

1-127 (0 = node address 2 not assigned).

NODE SUBNET 2

Explanation:

Indicates to which subnet the node belongs.

Range:

1-255 (0 = node subnet 2 not assigned).

DOMAIN ID 2

Explanation:

Indicates the ID of the domain within this subnet. Each domain in a LonWorks® network has a unique ID of 0,1,3 or 6 bytes in length. If the ID is shorter than 6 bytes, it is left justified in this field.

DOMAIN ID 2 [5] = byte 6 of the domain ID (MSB)

DOMAIN ID 2 [4] = byte 5 of the domain ID

DOMAIN ID 2 [3] = byte 4 of the domain ID

DOMAIN ID 2 [2] = byte 3 of the domain ID

DOMAIN ID 2 [1] = byte 2 of the domain ID

DOMAIN ID 2 [0] = byte 1 of the domain ID (LSB)

XMIT ERRORS

Explanation:

Indicates the number of CRC errors detected during packet reception. An increasing value may be due to collisions or noise on the transceiver input.

TRANS TIMEOUTS

Explanation:

Indicates the number of times that the node failed to receive expected acknowledgements or responses after retrying configuring number of times. An increasing value may be due to destination nodes being inaccessible on the network, transmission

failures because of noise on the channel, or if any destination node has insufficient buffers or receive transaction records.

Control locations

ABB drives and bypasses can receive control information from multiple sources including digital inputs, analogue inputs, the drive control panel and a communication module (e.g. FLON-01). ABB drives and bypasses allow the user to separately determine the source for each type of control information (Start, Stop, Direction, Reference, Fault Reset, etc.). In order to give the fieldbus master station the most complete control over the drive/bypass, the communication module must be selected as source for this information. See the user documentation of the drive/bypass for information on the selection parameters.

Communication

Overview

This chapter describes the FLON-01 operation on a LONWORKS® network.

General

In LONWORKS® networks, the network design emphasis is on designing the network variable connections. The connection design determines the amount of data flow between different nodes, thus determining the decision of transmission media and network topology overall in the network.

In designing the connections, the selection of protocol services is also crucial when determining the network data flow. By default, the network connections use acknowledged messaging with a certain retry count. This can, however, be changed by the installation tool to optimize the overall network performance.

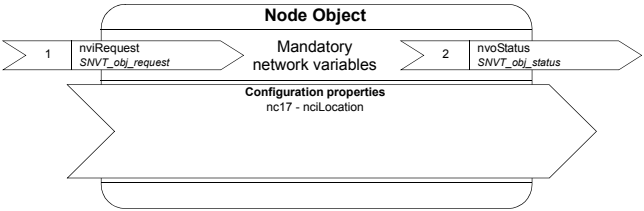
To be able to realize the required operation of the whole system, a clear picture of the capabilities of individual nodes is needed. These capabilities are determined by the network variables.

LONMARK® objects

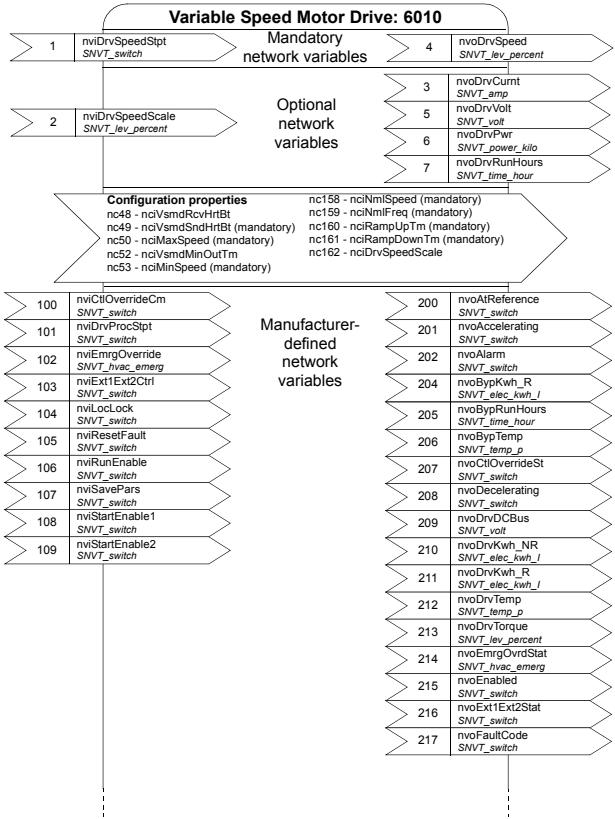
The FLON-01 includes a node object, a drive object and several open loop sensor or actuator objects. The node object is used to control the drive object. The drive object realizes the LONMARK® Functional Profile: ‘Variable Speed Motor Drive Version‘, 1.1. The profile defines a set of network variables and configuration properties. In addition, the drive object includes a set of manufacturer defined network variables and configuration properties that are defined in order to realize functions only applicable for ABB drives/bypasses.

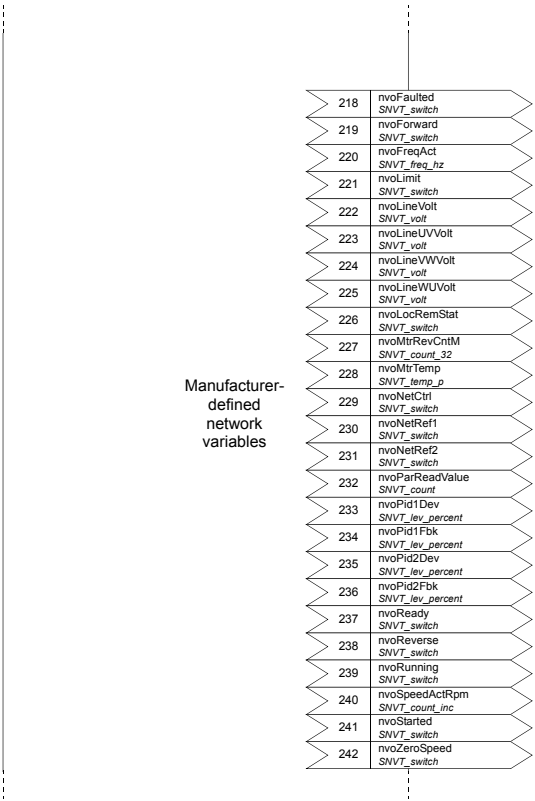
The network variables and configuration properties included by the node, drive and open loop sensor/actuator objects are detailed in chapter *Network variables*.

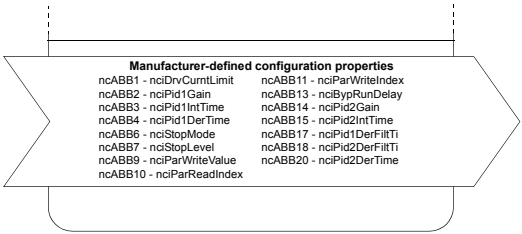
Node object



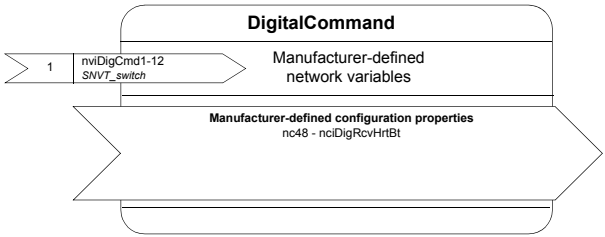
Variable speed motor drive object



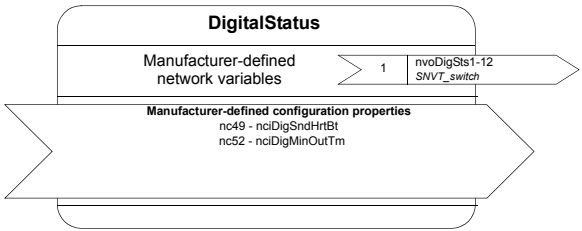

Manufacturer-defined network variables
218 nvoFaulted SNVT_switch
219 nvoForward SNVT_switch
220 nvoFreqAct SNVT_freq_hz
221 nvoLimit SNVT_switch
222 nvoLineVolt SNVT_volt
223 nvoLineUVVolt SNVT_volt
224 nvoLineVWVolt SNVT_volt
225 nvoLineWUVolt SNVT_volt
226 nvoLocRemStat SNVT_switch
227 nvoMtrRevCntM SNVT_count_32
228 nvoMtrTemp SNVT_temp_p
229 nvoNetCtrl SNVT_switch
230 nvoNetRef1 SNVT_switch
231 nvoNetRef2 SNVT_switch
232 nvoParReadValue SNVT_count
233 nvoPid1Dev SNVT_lev_percent
234 nvoPid1Fbk SNVT_lev_percent
235 nvoPid2Dev SNVT_lev_percent
236 nvoPid2Fbk SNVT_lev_percent
237 nvoReady SNVT_switch
238 nvoReverse SNVT_switch
239 nvoRunning SNVT_switch
240 nvoSpeedActRpm SNVT_count_inc
241 nvoStarted SNVT_switch
242 nvoZeroSpeed SNVT_switch



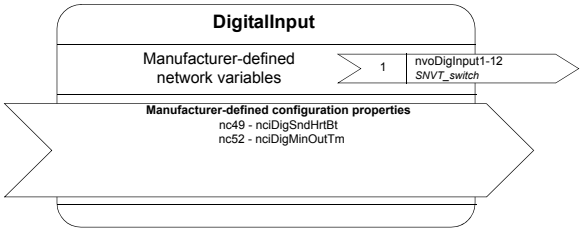
Open loop actuator object: DigitalCommand



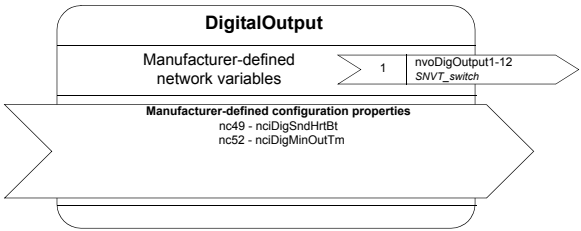
Open loop sensor object: DigitalStatus



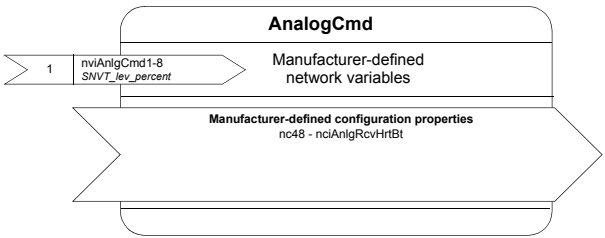
Open loop sensor object: DigitalInput



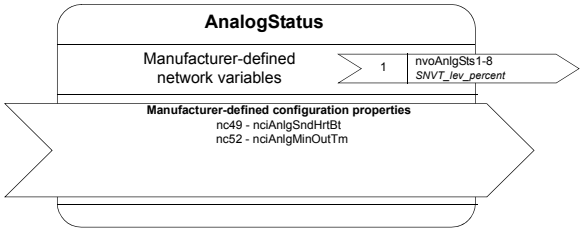
Open loop sensor object: DigitalOutput



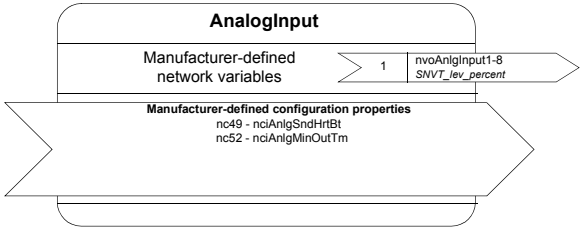
Open loop actuator object: AnalogCmd



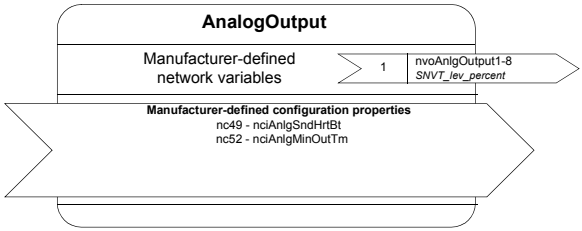
Open loop sensor object: AnalogStatus



Open loop sensor object: AnalogInput



Open loop sensor object: AnalogOutput



Resource files

For the installation of the FLON-01 with different installation tools, resource files are needed. If you have not received these files together with the FLON-01, please consult your local ABB representative.

The resource files are delivered as a compressed (*.ZIP) archive. Copy the ZIP archive to your “LonWorks” directory and unpack the compressed files.

The directory

LONWORKS\TYPES\USER\ABB\FLON

holds the user type and enumeration file (VSD_FLON01.TYP), the user type formatting file (VSD_FLON01.FMT), the functional profile template file (VSD_FLON01.FPT) and the language file (VSD_FLON01.ENU).

The directory

LONWORKS\IMPORT\ABB\FLON

holds the external interface files (*.XIF):

XIF version 2.0 (e.g. FLON_V20.XIF)
XIF version 3.1 (e.g. FLON_V31.XIF)
XIF version 4.1 (e.g. FLON_V41.XIF)
XIF version 4.4 (e.g. FLON_V44.XIF)

The device interface (XIF) file is a standalone file that documents the device interface for a type of device. It also documents the default values for all the configuration properties on the device. The different XIF files are for the different versions of the LonMaker® tool. The appropriate XIF file version is chosen depending on the installation tool used.

Network variables

Supported input network variables

The actual valid range of a network input variable can be smaller than the one reported in this manual, depending of the drive firmware. Typically the ACx550/bypass discards the parameter changes, if the value coming from the fieldbus is outside the range of the drive parameter.

Name	Description	More info on page
nviAnlgCmd1 … nviAnlgCmd8	Supply of analog commands to the host	*41*
nviCtlOverrideCm	Request for override of control and references sources by the network	*42*
nviDigCmd1 … nviDigCmd12	Control of state of digital outputs 1 to 12	*43*
nviDrvProcStpt	Low-resolution process setpoint	*44*
nviDrvSpeedScale	Scaling for *nviDrvSpeedStpt*	*45*
nviDrvSpeedStpt	Low-resolution speed setpoint	*46*
nviEmrgOverride	Possibility to stop the motor in case of an emergency	*47*
nviExt1Ext2Ctrl	Sets the control location that should be used (EXT1/EXT2)	*48*
nviLocLock	Sets local lock on or off	*48*
nviRequest	Enables control commands and updates from network	*49*
nviResetFault	Input to the motor to clear the fault status in the drive	*50*
nviRunEnable	Sets the run enable for the host	*51*

Name	Description	More info on page
nviSavePars	Request for parameter save to non-volatile memory by network	*51*
nviStartEnable1	Sets start enable 1 for the host	*52*
nviStartEnable2	Sets start enable 2 for the host	*52*

nviAnlgCmd1 … nviAnlgCmd8

Definition:

Network input SNVT_lev_percent nviAnlgCmd1
Network input SNVT_lev_percent nviAnlgCmd2
Network input SNVT_lev_percent nviAnlgCmd3
Network input SNVT_lev_percent nviAnlgCmd4
Network input SNVT_lev_percent nviAnlgCmd5
Network input SNVT_lev_percent nviAnlgCmd6
Network input SNVT_lev_percent nviAnlgCmd7
Network input SNVT_lev_percent nviAnlgCmd8

Explanation:

Each variable supplies an analog command (1…8) to the host. Configuration and mapping of these points is host-specific.

Valid range:

Value	Analog command
-32768	-163.84%
32766	163.83%
0x7FFF	Invalid

Default value:

0%

nviCtlOverrideCm

Definition:

Network input SNVT_switch nviCtlOverrideCm

Explanation:

Indicates that the LONWORKS® network requests override of control and references sources by the network.

Valid range:

State	Value	Override command
0	0%	No override
1	100%	Network overrides control and status

Default value:

No override (state 0, value 0%). This value will be adopted at power-up and in case of not receiving an update within the specified Receive Heartbeat time.

nviDigCmd1 … nviDigCmd12

Definition:

Network input SNVT_switch nviDigCmd1
Network input SNVT_switch nviDigCmd2
Network input SNVT_switch nviDigCmd3
Network input SNVT_switch nviDigCmd4
Network input SNVT_switch nviDigCmd5
Network input SNVT_switch nviDigCmd6
Network input SNVT_switch nviDigCmd7
Network input SNVT_switch nviDigCmd8
Network input SNVT_switch nviDigCmd9
Network input SNVT_switch nviDigCmd10
Network input SNVT_switch nviDigCmd11
Network input SNVT_switch nviDigCmd12

Explanation:

Each variable supplies a digital command (1…12) to the host. Configuration and mapping of these points is host-specific.

Valid range:

State	Value	Digital command
0	0%	Inactive
1	100%	Active

Default value:

Inactive (state 0, value 0%)

nviDrvProcStpt

Definition:

Network input SNVT_switch nviDrvProcStpt

Explanation:

Provides start/stop control and a low resolution process setpoint. It is active when external control location EXT2 is selected.

Valid range:

State	Value	Command
0	Not used	Stop
1	0	0%
1	1 to 200	0.5 to 100.0%
1	201 to 255	100%
0xFF	Not used	AUTO (Invalid)

Default value:

AUTO (state 0xFF). This value will be adopted at power-up and in case of not receiving an update within the specified Receive Heartbeat time.

nviDrvSpeedScale

Definition:

Network input SNVT_lev_percent nviDrvSpeedScale

Explanation:

Provides scaling for *nviDrvSpeedStpt*. For example, if *nviDrvSpeedStpt* value is 100% and *nviDrvSpeedScale* value is -150%, then the actual speed setpoint value is -150% meaning 1.5 times the nominal speed in reverse direction.

Valid range:

Value	Speed scaling
-32768	-163.840%
32766	163.830%
0x7FFF	Invalid

Default value:

Defined by *SCPTdefScale / nciDrvSpeedScale*. This value will be adopted at power-up and in case of not receiving an update within the specified Receive Heartbeat time.

nviDrvSpeedStpt

Definition:

Network input SNVT_switch nviDrvSpeedStpt

Explanation:

Provides start/stop control and a low-resolution speed setpoint for external control location EXT1. The speed setpoint is the result of multiplication of *nviDrvSpeedStpt* and *nviDrvSpeedScale*. For example, if the value of *nviDrvSpeedStpt* is 100% and the value of *nviDrvSpeedScale* is -150%, the actual speed setpoint value is -150% meaning 1.5 times nominal speed in reverse direction.

Valid range:

State	Value	Equivalent percentage	Requested speed
0	Not used	Not used	STOPPED
1	0	0%	0%
1	1 to 100	1 to 100.0%	1 to 100.0%
0xFF	Not used	Not used	AUTO (invalid)

Default value:

The default value is AUTO (state 0xFF). The value will be adapted at power-up and in case of not receiving an update within the specified Receive Heartbeat time.

nviEmrgOverride

Definition:

Network input SNVT_hvac_emerg nviEmrgOverride (HVAC Emergency Mode)

Explanation:

Provides the possibility to stop the motor in case of an emergency.

Valid range:

Setting	Function
EMERG_NORMAL	No emergency mode, motor control enabled.
EMERG_PRESSURIZE	See EMERG_NORMAL
EMERG_DEPRESSURIZE	See EMERG_NORMAL
EMERG_PURGE	See EMERG_NORMAL
EMERG_SHUTDOWN	Emergency shutdown mode. Stops motor.
EMERG_FIRE	See EMERG_NORMAL
EMERG_NULL	See EMERG_NORMAL

Default value:

The default value is EMERG_NORMAL. The value will be adapted at power-up and in case of not receiving an update within the specified Receive Heartbeat time.

nviExt1Ext2Ctrl

Definition:

Network input SNVT_switch nviExt1Ext2Ctrl

Explanation:

Sets the external control location (EXT1/EXT2).

Valid range:

State	Value	Control location
0	0%	EXT1
1	100%	EXT2

Default value:

EXT1 (state 0, value 0%).

nviLocLock

Definition:

Network input SNVT_switch nviLocLock

Explanation:

Sets local lock on or off.

Valid range:

State	Value	Command
0	0%	Local lock is off
1	100%	Local lock is on

Default value:

Local lock off (state 0, value 0%). This value will be adopted at power-up and in case of not receiving an update within the specified Receive Heartbeat time.

nviRequest

Definition:

Network input SNVT_obj_request nviRequest

Explanation:

Enables control commands and updates from network. The status of the node is reported in nvoStatus.

Valid range:

Object request	Function
RQ_UPDATE_STATUS	Updates nvoStatus.
RQ_CLEAR_STATUS	Clears nvoStatus.
RQ_CLEAR_ALARM	Resets fault in the drive/bypass.
RQ_REPORT_MASK	Reports supported requests in nvoStatus.
RQ_NORMAL	Sets object to default state. (the normal request)
RQ_DISABLE	Stops the drive/bypass with the selected stop mode and disables the operation and object.
RQ_ENABLE	Enables the drive for operation and enables the object.

Commands not listed above will be reported as invalid_request in nvoStatus.

nviResetFault

Definition:

Network input SNVT_switch nviResetFault

Explanation:

Clears the fault status in the host.

Valid range:

State	Value	Command
0	0%	Enable reset fault
1	100%	Reset fault

On a transition from 0 to 1, this input network variable clears the fault condition in the drive. Following a fault reset, this variable should be set to 0 to enable the next reset fault.

Default value:

No action (state 0, value 0%). This value will be adopted at power-up and in case of not receiving an update within the specified Receive Heartbeat time.

nviRunEnable

Definition:

Network input SNVT_switch nviRunEnable

Explanation:

Sets the run enable for the host.

Valid range:

State	Value	Command
0	0%	Run disabled
1	100%	Run enabled

Default value:

Run disabled (state 0, value 0%). This value will be adopted at power-up and in case of not receiving an update within the specified Receive Heartbeat time.

nviSavePars

Definition:

Network input SNVT_switch nviSavePars

Explanation:

Indicates that the LONWORKS® network requests parameters be saved to non-volatile memory.

Valid range:

State	Value	Command
0	0%	Do nothing
1	100%	Save parameters

Default value:

Do nothing (state 0, value 0%). This value will be adopted at power-up.

nviStartEnable1

Definition:

Network input SNVT_switch nviStartEnable1

Explanation:

Sets start enable 1 for the host.

Valid range:

State	Value	Command
0	0%	Start 1 disabled
1	100%	Start 1 enabled

Default value:

Start 1 disabled (state 0, value 0%). This value will be adopted at power-up and in case of not receiving an update within the specified Receive Heartbeat time.

nviStartEnable2

Definition:

Network input SNVT_switch nviStartEnable2

Explanation:

Sets start enable 2 for the host.

Valid range:

State	Value	Command
0	0%	Start 2 disabled
1	100%	Start 2 enabled

Default value:

Start 2 disabled (state 0, value 0%). This value will be adopted at power-up and in case of not receiving an update within the specified Receive Heartbeat time.

Supported output network variables

Name	Description	More info on page
nvoAccelerating	Indicates the drive is accelerating	*56*
nvoAlarm	Indicates the drive has an alarm	*57*
nvoAnlgInput1 … nvoAnlgInput8	Status of analog inputs 1 to 8	*58*
nvoAnlgOutput1 … nvoAnlgOutput8	Status of analog outputs 1 to 8	*59*
nvoAnlgSts1 … nvoAnlgSts8	Analog statuses 1 to 8 from the host	*60*
nvoAtReference	Indicates the drive is at reference	*61*
nvoBypKwh_R	Value of the resettable bypass kWh counter	*62*
nvoBypRunHours	Operation time for the motor by the bypass in whole hours	*63*
nvoBypTemp	Bypass PCB temperature in degrees C	*64*
nvoCtlOverrideSt	Indicates that the LonWorks® network has overridden other control and reference sources	*65*
nvoDecelerating	Indicates the drive is decelerating	*66*
nvoDigInput1 … nvoDigInput12	Status of digital inputs 1 to 8	*67*
nvoDigOutput1 … nvoDigOutput12	Status of digital outputs 1 to 8	*68*
nvoDigSts1 … nvoDigSts12	Digital statuses 1 to 8 from the host	*69*
nvoDrvCurnt	Drive current in amperes	*70*
nvoDrvDCBus	Drive DC bus voltage	*71*
nvoDrvKwh_NR	Value of the non-resettable drive kWh counter	*72*
nvoDrvKwh_R	Value of the resettable drive kWh counter	*73*
nvoDrvPwr	Drive power in kilowatts	*74*

Name	Description	More info on page
nvoDrvRunHours	Operation time for the motor by the drive in whole hours	*75*
nvoDrvSpeed	Speed of the drive as a percentage of the nominal speed	*76*
nvoDrvTemp	Temperature in degrees C	*77*
nvoDrvTorque	Output torque as a percentage of motor nominal torque	*78*
nvoDrvVolt	Motor output voltage	*79*
nvoEmrgOvrdStat	Feedback for *nviEmrgOverride*	*80*
nvoEnabled	Indicates the drive has received the run enable command	*81*
nvoExt1Ext2Stat	Control location currently used (EXT1/EXT2)	*82*
nvoFaultCode	Latest malfunction code that has occurred	*83*
nvoFaulted	Information on the fault status of the drive	*84*
nvoForward	Indicates the drive is running in the forward direction	*85*
nvoFreqAct	Output frequency in Hz	*86*
nvoLimit	Indicates the drive has reached a speed, frequency or torque limit	*87*
nvoLineUVVolt, *nvoLineVWVolt*, *nvoLineWUVolt*	Line-to-line input voltages in volts	*88*
nvoLineVolt	Drive input voltage	*89*
nvoLocRemStat	Control mode (Local or Remote)	*90*
nvoMtrRevCntM	Accumulated revolutions of the motor in millions	*91*
nvoMtrTemp	Motor temperature in degrees C	*92*
nvoNetCtrl	Indicates the LonWorks® network is selected as the active control source	*93*

Name	Description	More info on page
nvoNetRef1	Indicates the LonWorks® network is selected as the active reference REF1 source	*94*
nvoNetRef2	Indicates the LonWorks® network is selected as the active reference REF2 source	*95*
nvoParReadValue	Data read at parameter set by *UCPTparReadIndex / nciParReadIndex*	*96*
nvoPid1Dev, nvoPid2Dev	PID controller deviation values	*97*
nvoPid1Fbk, nvoPid2Fbk	PID controller feedback values	*98*
nvoReady	Indicates the drive is ready to receive a start command	*99*
nvoReverse	Indicates the drive is running in the reverse direction	*100*
nvoRunning	Motor running state	*101*
nvoSpeedActRpm	Output speed in rpm	*102*
nvoStarted	Indicates the drive has received a start command	*103*
nvoStatus	Reports the node object status	*104*
nvoZeroSpeed	Indicates the drive is at zero speed	*105*

nvoAccelerating

Definition:

Network output SNVT_switch nvoAccelerating

Explanation:

Indicates the drive is accelerating.

Valid range:

State	Value	Status
0	0.0%	Not accelerating
1	100.0%	Accelerating

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoAlarm

Definition:

Network output SNVT_switch nvoAlarm

Explanation:

Indicates the drive has an alarm.

Valid range:

State	Value	Status
0	0.0%	No alarm
1	100.0%	Alarm

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoAnlgInput1 … nvoAnlgInput8

Definition:

Network output SNVT_lev_percent nvoAnlgInput1
Network output SNVT_lev_percent nvoAnlgInput2
Network output SNVT_lev_percent nvoAnlgInput3
Network output SNVT_lev_percent nvoAnlgInput4
Network output SNVT_lev_percent nvoAnlgInput5
Network output SNVT_lev_percent nvoAnlgInput6
Network output SNVT_lev_percent nvoAnlgInput7
Network output SNVT_lev_percent nvoAnlgInput8

Explanation:

Each variable indicates the value of the corresponding analog input (1…8) of the host.

Valid range:

Value	Analog input value
-32768	-163.84%
32766	163.83%
0x7FFF	Invalid

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoAnlgOutput1 … nvoAnlgOutput8

Definition:

Network output SNVT_lev_percent nvoAnlgOutput1
Network output SNVT_lev_percent nvoAnlgOutput2
Network output SNVT_lev_percent nvoAnlgOutput3
Network output SNVT_lev_percent nvoAnlgOutput4
Network output SNVT_lev_percent nvoAnlgOutput5
Network output SNVT_lev_percent nvoAnlgOutput6
Network output SNVT_lev_percent nvoAnlgOutput7
Network output SNVT_lev_percent nvoAnlgOutput8

Explanation:

Each variable indicates the value of the corresponding analog output (1…8) of the host.

Valid range:

Value	Analog output value
-32768	-163.84%
32766	163.83%
0x7FFF	Invalid

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoAnlgSts1 … nvoAnlgSts8

Definition:

Network output SNVT_lev_percent nvoAnlgSts1
Network output SNVT_lev_percent nvoAnlgSts2
Network output SNVT_lev_percent nvoAnlgSts3
Network output SNVT_lev_percent nvoAnlgSts4
Network output SNVT_lev_percent nvoAnlgSts5
Network output SNVT_lev_percent nvoAnlgSts6
Network output SNVT_lev_percent nvoAnlgSts7
Network output SNVT_lev_percent nvoAnlgSts8

Explanation:

Each variable indicates an analog status (1…8) from the host. Configuration and mapping of these points is host-specific.

Valid range:

Value	Analog status
-32768	-163.84%
32766	163.83%
0x7FFF	Invalid

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoAtReference

Definition:

Network output SNVT_switch nvoAtReference

Explanation:

Indicates the drive is at reference.

Valid range:

State	Value	Status
0	0.0%	Not at reference
1	100.0%	At reference

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoBypKwh_R

Definition:

Network output SNVT_elec_kwh_l nvoBypKwh_R

Explanation:

Value of the resettable bypass kWh counter.

Valid range:

Value	Energy
-2147483648	-214748364.8 kWh
2147483646	214748364.6 kWh
0x7FFFFFFF	Invalid

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoBypRunHours

Definition:

Network output SNVT_time_hour nvoBypRunHours

Explanation:

Total operation time for the motor by the bypass in running hours.

Valid range:

Value	Time
0	0.0 h
65534	65534 h
65535	Invalid

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoBypTemp

Definition:

Network output SNVT_temp_p nvoBypTemp

Explanation:

Provides the bypass PCB temperature in degrees C.

Valid range:

Value	Temperature
-27317	-273.17 °C
0	0 °C
32767	327.67 °C

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoCtlOverrideSt

Definition:

Network output SNVT_switch nvoCtlOverrideSt

Explanation:

Indicates that the LONWORKS® network has overridden other control and reference sources.

Valid range:

State	Value	Control source
0	0.0	Other
1	100.0	Network

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoDecelerating

Definition:

Network output SNVT_switch nvoDecelerating

Explanation:

Indicates the drive is decelerating.

Valid range:

State	Value	Status
0	0.0%	Not decelerating
1	100.0%	Decelerating

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoDigInput1 … nvoDigInput12

Definition:

Network output SNVT_switch nvoDigInput1
Network output SNVT_switch nvoDigInput2
Network output SNVT_switch nvoDigInput3
Network output SNVT_switch nvoDigInput4
Network output SNVT_switch nvoDigInput5
Network output SNVT_switch nvoDigInput6
Network output SNVT_switch nvoDigInput7
Network output SNVT_switch nvoDigInput8
Network output SNVT_switch nvoDigInput9
Network output SNVT_switch nvoDigInput10
Network output SNVT_switch nvoDigInput11
Network output SNVT_switch nvoDigInput12

Explanation:

Each variable indicates the status of the corresponding digital input (1…12) of the host.

Valid range:

State	Value	Digital input status
0	0%	Inactive
1	100%	Active

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoDigOutput1 … nvoDigOutput12

Definition:

Network output SNVT_switch nvoDigOutput1
Network output SNVT_switch nvoDigOutput2
Network output SNVT_switch nvoDigOutput3
Network output SNVT_switch nvoDigOutput4
Network output SNVT_switch nvoDigOutput5
Network output SNVT_switch nvoDigOutput6
Network output SNVT_switch nvoDigOutput7
Network output SNVT_switch nvoDigOutput8
Network output SNVT_switch nvoDigOutput9
Network output SNVT_switch nvoDigOutput10
Network output SNVT_switch nvoDigOutput11
Network output SNVT_switch nvoDigOutput12

Explanation:

Each variable indicates the status of the corresponding digital output (1…12) of the host.

Valid range:

State	Value	Digital output status
0	0%	Inactive
1	100%	Active

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoDigSts1 … nvoDigSts12

Definition:

Network output SNVT_switch nvoDigSts1
Network output SNVT_switch nvoDigSts2
Network output SNVT_switch nvoDigSts3
Network output SNVT_switch nvoDigSts4
Network output SNVT_switch nvoDigSts5
Network output SNVT_switch nvoDigSts6
Network output SNVT_switch nvoDigSts7
Network output SNVT_switch nvoDigSts8
Network output SNVT_switch nvoDigSts9
Network output SNVT_switch nvoDigSts10
Network output SNVT_switch nvoDigSts11
Network output SNVT_switch nvoDigSts12

Explanation:

Each variable indicates a digital status (1…12) from the host. Configuration and mapping of these points is host-specific.

Valid range:

State	Value	Digital status
0	0%	Inactive
1	100%	Active

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoDrvCurnt

Definition:

Network output SNVT_amp nvoDrvCurnt

Explanation:

Drive current in amperes.

Valid Range:

Value	Current
0	0.0 A
32766	3276.6 A
0x7FFF	Invalid

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoDrvDCBus

Definition:

Network output SNVT_volt nvoDrvDCBus

Explanation:

Drive DC bus voltage.

Valid range:

Value	Voltage
0	0.0 V
3276.6	3276.6 V
0x7FFF	Invalid

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoDrvKwh_NR

Definition:

Network output SNVT_elec_kwh_l nvoDrvKwh_NR

Explanation:

Value of the non-resettable drive kWh counter.

Valid range:

Value	Energy
-2147483648	-214748364.8 kWh
2147483646	214748364.6 kWh
0x7FFFFFFF	Invalid

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoDrvKwh_R

Definition:

Network output SNVT_elec_kwh_l nvoDrvKwh_R

Explanation:

Value of the resettable drive kWh counter.

Valid range:

Value	Energy
-2147483648	-214748364.8 kWh
2147483646	214748364.6 kWh
0x7FFFFFFF	Invalid

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoDrvPwr

Definition:

Network output SNVT_power_kilo nvoDrvPwr

Explanation:

Drive power in kilowatts.

Valid range:

Value	Power
0	0.0 kW
65534	6553.4 kW
65535	Invalid

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoDrvRunHours

Definition:

Network output SNVT_time_hour nvoDrvRunHours

Explanation:

Total operation time for the motor by the drive in running hours.

Valid range:

Value	Time
0	0.0 h
65534	65534 h
65535	Invalid

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoDrvSpeed

Definition:

Network output SNVT_lev_percent nvoDrvSpeed

Explanation:

Provides the speed of the drive as a percentage of the nominal speed.

Valid range:

Value	Speed
-32768	-163.84%
32766	163.83%
0x7FFF	Invalid

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoDrvTemp

Definition:

Network output SNVT_temp_p nvoDrvTemp

Explanation:

Drive temperature in degrees C.

Valid range:

Value	Temperature
-27317	-273.17 °C
0	0 °C
32767	327.67 °C

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoDrvTorque

Definition:

Network output SNVT_lev_percent nvoDrvTorque

Explanation:

Output torque as a percentage of motor nominal torque.

Valid range:

Value	Torque
-32768	-163.84%
32766	163.83%
0x7FFF	Invalid

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoDrvVolt

Definition:

Network output SNVT_volt nvoDrvVolt

Explanation:

Motor output voltage.

Valid range:

Value	Voltage
0	0.0 V
3276.6	3276.6 V
0x7FFF	Invalid

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoEmrgOvrdStat

Definition:

Network output SNVT_hvac_emerg nvoEmrgOvrdStat

Explanation:

Feedback for the nviEmrgOverride.

Valid range:

Value	Function
EMERG_NORMAL	No emergency mode, motor control enabled
EMERG_SHUTDOWN	Emergency shutdown mode. Stops motor.
EMERG_NUL	Invalid

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoEnabled

Definition:

Network output SNVT_switch nvoEnabled

Explanation:

Indicates the drive has received the run enable command.

Valid range:

State	Value	Status
0	0.0%	Not enabled
1	100.0%	Enabled

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoExt1Ext2Stat

Definition:

Network output SNVT_switch nvoExt1Ext2Stat

Explanation:

This output variable shows the external control location currently used (EXT1 or EXT2).

Valid range:

State	Value	Control location
0	0%	EXT1
1	100%	EXT2

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoFaultCode

Definition:

Network output SNVT_switch nvoFaultCode

Explanation:

Provides the current fault (DRIVECOMM) reported by host.

Valid range:

Value	Fault code
0…65535	DRIVECOMM fault code

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoFaulted

Definition:

Network output SNVT_switch nvoFaulted

Explanation:

Provides information on the fault status of the host.

Valid range:

State	Value	Status
0	0.0	Not faulted
1	100.0	Faulted

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoForward

Definition:

Network output SNVT_switch nvoForward

Explanation:

Indicates the drive is running in the forward direction.

Valid range:

State	Value	Status
0	0.0%	Not forward
1	100.0%	Forward

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoFreqAct

Definition:

Network output SNVT_freq_hz nvoFreqAct

Explanation:

Output frequency in Hz.

Valid range:

Value	Frequency
0	0.0 Hz
65535	6553.5 Hz

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoLimit

Definition:

Network output SNVT_switch nvoLimit

Explanation:

Indicates the drive has reached a speed, frequency or torque limit.

Valid range:

State	Value	Status
0	0.0%	Within limits
1	100.0%	Out of limits

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoLineUVVolt, nvoLineVWVolt, nvoLineWUVolt

Definition:

Network output SNVT_volt nvoLineUVVolt
Network output SNVT_volt nvoLineVWVolt
Network output SNVT_volt nvoLineWUVolt

Explanation:

Each variable provides the corresponding line-to-line input voltage in volts.

Valid range:

Value	Voltage
0	0.0 V
3276.6	3276.6 V
0x7FFF	Invalid

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoLineVolt

Definition:

Network output SNVT_volt nvoLineVolt

Explanation:

Provides the drive input voltage in volts.

Valid range:

Value	Voltage
0	0.0 V
3276.6	3276.6 V
0x7FFF	Invalid

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoLocRemStat

Definition:

Network output SNVT_switch nvoLocRemStat

Explanation:

This output variable shows if the drive is in Local or Remote control mode.

Valid range:

State	Value	Control mode
0	0%	Local
1	100%	Remote

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoMtrRevCntM

Definition:

Network output SNVT_count_32 nvoMtrRevCntM

Explanation:

Accumulated revolutions of the motor in millions.

Valid range:

Value	Motor revolutions
0	0
1	1,000,000
4294967295	4,294,967,295,000,000

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoMtrTemp

Definition:

Network output SNVT_temp_p nvoMtrTemp

Explanation:

Motor temperature in degrees C.

Valid range:

Value	Temperature
-27317	-273.17 °C
0	0 °C
32767	327.67 °C

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoNetCtrl

Definition:

Network output SNVT_switch nvoNetCtrl

Explanation:

Indicates the LONWORKS® network is selected as the active control source.

Valid range:

State	Value	Control source
0	0.0%	Other
1	100.0%	Network

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoNetRef1

Definition:

Network output SNVT_switch nvoNetRef1

Explanation:

Indicates the LONWORKS® network is selected as the active reference REF1 source.

Valid range:

State	Value	Reference Source
0	0.0%	Other
1	100.0%	Network

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoNetRef2

Definition:

Network output SNVT_switch nvoNetRef2

Explanation:

Indicates the LONWORKS® network is selected as the active reference REF2 source.

Valid range:

State	Value	Reference Source
0	0.0%	Other
1	100.0%	Network

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoParReadValue

Definition:

Network output SNVT_count nvoParReadValue

Explanation:

Contains the value read from parameter set by *UCPTparReadIndex / nciParReadIndex*.

Valid range:

Value	Parameter value
0…65534	Parameter-dependent
0xFFFF	Invalid

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoPid1Dev, nvoPid2Dev

Definition:

Network output SNVT_lev_percent nvoPID1Dev
Network output SNVT_lev_percent nvoPID2Dev

Explanation:

PID controller deviation values.

Valid range:

Value	Feedback
-32768	-163.84%
32766	163.83%
32767	Invalid

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoPid1Fbk, nvoPid2Fbk

Definition:

Network output SNVT_lev_percent nvoPid1Fbk
Network output SNVT_lev_percent nvoPid2Fbk

Explanation:

PID controller feedback values.

Valid range:

Value	Feedback
-32768	-163.84%
32766	163.83%
32767	Invalid

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoReady

Definition:

Network output SNVT_switch nvoReady

Explanation:

Indicates the drive is ready to receive a start command.

Valid range:

State	Value	Status
0	0.0%	Not ready
1	100.0%	Ready

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoReverse

Definition:

Network output SNVT_switch nvoReverse

Explanation:

Indicates the drive is running in the reverse direction.

Valid range:

State	Value	Status
0	0.0%	Not reverse
1	100.0%	Reverse

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoRunning

Definition:

Network output SNVT_switch nvoRunning

Explanation:

Indicates the motor running state.

Valid range:

State	Value	Status
0	0.0%	Not running
1	100.0%	Running

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoSpeedActRpm

Definition:

Network output SNVT_count_inc nvoSpeedActRpm

Explanation:

Output speed in rpm.

Valid range:

Value	Speed
-32768	-32767 rpm
32767	32767 rpm

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoStarted

Definition:

Network output SNVT_switch nvoStarted

Explanation:

Indicates the drive has received a start command.

Valid range:

State	Value	Status
0	0.0%	Not started
1	100.0%	Started

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

nvoStatus

Definition:

Network output SNVT_obj_status nvoStatus

Explanation:

Reports the node object status.

Valid range:

Bit settings	Description/Function
invalid_id	Invalid node ID requested
report_mask	Reporting supported fields
disabled	RQ_DISABLE active
electrical_fault	Fault bit in Status Word
in_alarm	Alarm bit in Status Word

nvoZeroSpeed

Definition:

Network output SNVT_switch nvoZeroSpeed

Explanation:

Indicates the drive is at zero speed.

Valid range:

State	Value	Status
0	0.0%	Not at zero speed
1	100.0%	At zero speed

When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

Supported network configuration properties

All configuration properties are defined as configuration network variables in this product. Some network management tools will show these variables as SCPT/UCPT configuration properties and some as network configuration variables. The difference in the network management tools only affects the presentation of the variables but not their functionality.

Name	Description	More info on page
SCPTdefScale / nciDrvSpeedScale	Default value for *nviDrvSpeedScale*	*109*
SCPTlocation / nciLocation	Location label	*109*
SCPTmaxRcvTime / nciAnlgRcvHrtBt	Defines the maximum time after the last update of *nviAnlgCmd1 … nviAnlgCmd8*.	*110*
SCPTmaxRcvTime / nciDigRcvHrtBt	Defines the maximum time after the last update of *nviDigCmd1 … nviDigCmd12*.	*111*
SCPTmaxRcvTime / nciVsmdRcvHrtBt	Defines the maximum allowed update interval for input network variables *nviDrvSpeedStpt* and *nviDrvSpeedScale*	*112*
SCPTmaxSendTime / nciAnlgSndHrtBt	Maximum time that expires before network variables *nvoAnlgSts1 … nvoAnlgSts8, nvoAnlgInput1 … nvoAnlgInput8, nvoAnlgOutput1 … nvoAnlgOutput8* will automatically be updated.	*113*
SCPTmaxSendTime / nciDigSndHrtBt	Maximum time that expires before network variables *nvoDigSts1 … nvoDigSts12, nvoDigInput1 … nvoDigInput12, nvoDigOutput1 … nvoDigOutput12* will automatically be updated.	*114*
SCPTmaxSendTime / nciVsmdSndHrtBt	Maximum send time for the variable *nvoDrvSpeed*	*115*
SCPTmaxSetpoint / nciMaxSpeed	Defines the maximum motor speed	*116*

Name	Description	More info on page
SCPTminSendTime / nciAnlgMinOutTm	Defines the minimum wait time before network output variables *nvoAnlgSts1 … nvoAnlgSts8, nvoAnlgInput1 … nvoAnlgInput8, nvoAnlgOutput1 … nvoAnlgOutput8* can be propagated (resent).	*117*
SCPTminSendTime / nciDigMinOutTm	Defines the minimum wait time before network output variables *nvoDigSts1 … nvoDigSts12, nvoDigInput1 … nvoDigInput12, nvoDigOutput1 … nvoDigOutput12* can be propagated (resent).	*118*
SCPTminSendTime / nciVsmdMinOutTm	Defines the minimum wait time before the network output variables can be propagated (resent)	*119*
SCPTminSetpoint / nciMinSpeed	Defines the minimum speed of the motor as a percentage of the nominal speed defined by the Nominal Speed *(SCPTnomRPM / nciNmlSpeed)* configuration value	*120*
SCPTnomFreq / nciNmlFreq	Sets the nominal frequency of the motor	*121*
SCPTnomRPM / nciNmlSpeed	Sets the nominal motor speed	*122*
SCPTrampDownTm / nciRampDownTm	Sets the ramp down time of the drive	*123*
SCPTrampUpTm / nciRampUpTm	Sets the ramp up time of the drive	*123*
UCPTbypRunDelay / nciBypRunDelay	Additional pick-up delay for bypass contactor	*124*
UCPTdrvCurntLimit / nciDrvCurntLimit	Drive current limit	*124*
UCPTparReadIndex / nciParReadIndex	Chooses the parameter value to be read from the drive	*125*

Name	Description	More info on page
UCPTparValue / nciParWriteValue	Value input for the user selected parameter *UCPTparWriteIndex / nciParWriteIndex*	*125*
UCPTparWriteIndex / nciParWriteIndex	Defines the parameter value to be written to the drive	*126*
UCPTpid1DerFiltTime / nciPid1DerFiltTi, UCPTpid2DerFiltTime / nciPid2DerFiltTi	PID controller derivation filter times in seconds	*127*
UCPTpid1DerTime / nciPid1DerTime, UCPTpid2DerTime / nciPid2DerTime	PID controller derivation times in seconds	*128*
UCPTpid1Gain / nciPid1Gain, UCPTpid2Gain / nciPid2Gain	PID controller gain values in percent	*129*
UCPTpid1IntTime / nciPid1IntTime, UCPTpid2IntTime / nciPid2IntTime	PID controller integration times in seconds	*130*
UCPTstopLevel / nciStopLevel	Stop level value in ramp stop mode	*131*
UCPTstopMode / nciStopMode	Selects between coast and ramp stop	*132*

SCPTdefScale / nciDrvSpeedScale

Definition:

Network input config SNVT_lev_percent nciDrvSpeedScale

Explanation:

Default value for *nviDrvSpeedScale*.

Valid range:

Value	Speed scaling
-32768	-163.840%
32766	163.830%
32767	Invalid

Default value:

100%

SCPTlocation / nciLocation

Definition:

Network input config SNVT_str_asc nciLocation

Explanation:

Location Label; used to provide more descriptive physical location information than can be provided by the Neuron Chip's 6-byte location string.

Valid range:

Any NULL terminated ASCII string of 31 characters.

Default value:

Empty spaces.

SCPTmaxRcvTime / nciAnlgRcvHrtBt

Definition:

Network config input SNVT_time_sec nciAnlgRcvHrtBt

Explanation:

Controls the maximum time that elapses after the last update of *nviAnlgCmd1 … nviAnlgCmd8* before the default values are used.

Valid range:

Value	Time
0	Disabled
1	0.1 s
65534	6553.4 s
65535	Invalid

Default value:

0 (no failure detect)

SCPTmaxRcvTime / nciDigRcvHrtBt

Definition:

Network config input SNVT_time_sec nciDigRcvHrtBt

Explanation:

Controls the maximum time that elapses after the last update of *nviDigCmd1 … nviDigCmd12* before the default values are used.

Valid range:

Value	Time
0	Disabled
1	0.1 s
65534	6553.4 s
65535	Invalid

Default value:

0 (no failure detect)

SCPTmaxRcvTime / nciVsmdRcvHrtBt

Definition:

Network config input SNVT_time_sec nciVsmdRcvHrtBt

Explanation:

Controls the maximum time that elapses after the last update of the network variables before the VSMD object starts to use its default values.

Valid range:

Value	Time
0	Disabled
1	0.1 s
65534	6553.4 s
65535	Invalid

Default value:

0 (no failure detect)

SCPTmaxSendTime / nciAnlgSndHrtBt

Definition:

Network config input SNVT_time_sec nciAnlgSndHrtBt

Explanation:

Defines the maximum period of time that expires before network variables *nvoAnlgSts1 … nvoAnlgSts8, nvoAnlgInput1 … nvoAnlgInput8, nvoAnlgOutput1 … nvoAnlgOutput8* will automatically be updated.

Valid range:

Value	Time
0	No automatic update
1	0.1 s
65534	6553.4 s
65535	Invalid

Default value:

0 (no automatic update)

SCPTmaxSendTime / nciDigSndHrtBt

Definition:

Network config input SNVT_time_sec nciDigSndHrtBt

Explanation:

Defines the maximum period of time that expires before network variables *nvoDigSts1 … nvoDigSts12, nvoDigInput1 … nvoDigInput12, nvoDigOutput1 … nvoDigOutput12* will automatically be updated.

Valid range:

Value	Time
0	No automatic update
1	0.1 s
65534	6553.4 s
65535	Invalid

Default value:

0 (no automatic update)

SCPTmaxSendTime / nciVsmdSndHrtBt

Definition:

Network config input SNVT_time_sec nciVsmdSndHrtBt

Explanation:

Defines the maximum period of time that expires before the network variables will automatically be updated.

Valid range:

Value	Time
0	No automatic update
1	0.1 s
65534	6553.4 s
65535	Invalid

Default value:

0 (no automatic update)

SCPTmaxSetpoint / nciMaxSpeed

Definition:

Network config input SNVT_lev_percent nciMaxSpeed

Explanation:

Used to define the maximum motor speed. The value is entered as a percent of nominal speed, as defined by the Nominal Speed *(SCPTnomRPM / nciNmlSpeed)* configuration value.

The value of the maximum speed must be defined so that

-163.840 ≤ minimum speed ≤ maximum speed ≤ 163.830

Valid range:

Value	Maximum speed
-32768	-163.840%
32766	163.830%
32767	Invalid

Default value:

Read from host on power-up.

SCPTminSendTime / nciAnlgMinOutTm

Definition:

Network config input SNVT_time_sec nciAnlgMinOutTm

Explanation:

Defines the minimum wait time before network output variables *nvoAnlgSts1 … nvoAnlgSts8, nvoAnlgInput1 … nvoAnlgInput8, nvoAnlgOutput1 … nvoAnlgOutput8* can be propagated (resent).

Valid range:

Value	Time
0	Disabled
1	0.1 s
65534	6553.4 s
65535	Invalid

Default value:

0.5 s

SCPTminSendTime / nciDigMinOutTm

Definition:

Network config input SNVT_time_sec nciDigMinOutTm

Explanation:

Defines the minimum wait time before network output variables *nvoDigSts1 … nvoDigSts12, nvoDigInput1 … nvoDigInput12, nvoDigOutput1 … nvoDigOutput12* can be propagated (resent).

Valid range:

Value	Time
0	Disabled
1	0.1 s
65534	6553.4 s
65535	Invalid

Default value:

0.5 s

SCPTminSendTime / nciVsmdMinOutTm

Definition:

Network config input SNVT_time_sec nciVsmdMinOutTm

Explanation:

Defines the minimum wait time before the network output variables can be propagated (resent).

Valid range:

Value	Time
0	Disabled
1	0.1 s
65534	6553.4 s
65535	Invalid

Default value:

0.5 s

SCPTminSetpoint / nciMinSpeed

Definition:

Network config input SNVT_lev_percent nciMinSpeed

Explanation:

Defines the minimum speed of the motor as a percentage of the nominal speed defined by the Nominal Speed *(SCPTnomRPM / nciNmlSpeed)* configuration value.

The value of the minimum speed must be defined so that

-163.840 ≤ minimum speed ≤ maximum speed ≤ 163.830

Valid range:

Value	Maximum speed
-32768	-163.840%
32766	163.830%
32767	Invalid

Default value:

Read from host on power-up.

SCPTnomFreq / nciNmlFreq

Definition:

Network config input SNVT_freq_hz nciNmlFreq

Explanation:

Provides the nominal frequency of the motor in Hz.

Valid range:

Value	Nominal frequency
0	0 Hz
100	100 Hz

Default value:

Read from host on power-up/refresh.

SCPTnomRPM / nciNmlSpeed

Definition:

Network config input SNVT_rpm nciNmlSpeed

Explanation:

Provides the nominal motor speed in rpm. This value is necessary to determine the minimum and maximum speed for the motor, based on the configuration properties *SCPTminSetpoint / nciMinSpeed* and *SCPTmaxSetpoint / nciMaxSpeed*.

Valid range:

Value	Nominal speed
0	0 rpm
65534	65534 rpm
65535	Invalid

Default value:

Read from host on power-up/refresh.

SCPTrampDownTm / nciRampDownTm

Definition:

Network config input SNVT_time_sec nciRampDownTm

Explanation:

Provides the ramp down time of the motor.

Valid range:

Value	Ramp down time
0	0.0 s
65534	6553.4 s
65535	Invalid

Default value:

Read from host on power-up/refresh.

SCPTrampUpTm / nciRampUpTm

Definition:

Network config input SNVT_time_sec nciRampUpTm

Explanation:

Provides the ramp up time of the motor.

Valid range:

Value	Ramp up time
0	0.0 s
65534	6553.4 s
65535	Invalid

Default value:

Read from host on power-up/refresh.

UCPTbypRunDelay / nciBypRunDelay

Definition:

Network input config SNVT_time_sec nciBypRunDelay

Explanation:

Sets the additional pick-up delay for bypass contactor.

Valid Range:

Value	Pick-up delay
0	Disabled
1	0.1 s
65534	6553.4 s
65535	Invalid

Default Value:

Read from host on power-up/refresh.

UCPTdrvCurntLimit / nciDrvCurntLimit

Definition:

Network input config SNVT_amp nciDrvCurntLimit

Explanation:

Sets the drive output current limit in amperes.

Valid Range:

Value	Current limit
0	0.0 A
32766	3276.6 A
0x7FFF	Invalid

Default Value:

Read from host on power-on/refresh.

UCPTparReadIndex / nciParReadIndex

Definition:

Network config input SNVT_count nciParReadIndex

Explanation:

Contains the parameter to read for *nvoParReadValue*.

Valid range:

Value	Parameter value
0…65535	Parameter-dependent

Default value:

0

UCPTparValue / nciParWriteValue

Definition:

Network config input SNVT_count_inc nciParWriteValue

Explanation:

Contains the value to be written to the parameter set by *UCPTparWriteIndex / nciParWriteIndex*.

Valid range:

Value	Parameter value
0…65534	Parameter-dependent
0xFFFF	Invalid

Default value:

0

UCPTparWriteIndex / nciParWriteIndex

Definition:

Network config input SNVT_count nciParWriteIndex

Explanation:

Contains the parameter to write for *UCPTparValue / nciParWriteValue*.

Valid range:

Value	Parameter value
0…65535	Parameter-dependent

Default value:

0

UCPTpid1DerFiltTime / nciPid1DerFiltTi,
UCPTpid2DerFiltTime / nciPid2DerFiltTi

Definition:

Network config input SNVT_time_sec nciPid1DerFiltTi
Network config input SNVT_time_sec nciPid2DerFiltTi

Explanation:

PID controller derivation filter times in seconds.

Valid range:

Value	Filter time
0	0 s
1	0.1 s
65535	6553.5 s
65537	Invalid

Default value:

Read from host on power-on/refresh.

UCPTpid1DerTime / nciPid1DerTime,
UCPTpid2DerTime / nciPid2DerTime

Definition:

Network config input SNVT_time_sec nciPid1DerTime
Network config input SNVT_time_sec nciPid2DerTime

Explanation:

PID controller derivation times in seconds.

Valid range:

Value	Derivation time
0	0 s
1	0.1 s
65535	6553.5 s
65537	Invalid

Default value:

Read from host on power-on/refresh.

UCPTpid1Gain / nciPid1Gain, UCPTpid2Gain / nciPid2Gain

Definition:

Network config input SNVT_lev_percent nciPid1Gain
Network config input SNVT_lev_percent nciPid2Gain

Explanation:

PID controller gain values.

Valid Range:

Value	Gain
-32768	-163.84%
32766	163.83%
32767	Invalid

Default Value:

Read from the host on power-on/refresh.

UCPTpid1IntTime / nciPid1IntTime,
UCPTpid2IntTime / nciPid2IntTime

Definition:

Network config input SNVT_time_sec nciPid1IntTime
Network config input SNVT_time_sec nciPid2IntTime

Explanation:

PID controller integration times in seconds.

Valid range:

Value	Time
0	0 s
1	0.1 s
65535	6553.5 s
65537	Invalid

Default value:

Read from host on power-on/refresh.

UCPTstopLevel / nciStopLevel

Definition:

Network config input SNVT_lev_percent nciStopLevel

Explanation:

Stop level value in ramp stop mode. When the speed of the drive reaches this level, a coast stop is performed. The value is relative to *nvoDrvSpeed* i.e. the value of 5% corresponds to *nvoDrvSpeed* value 5%.

Valid range:

Value	Stop level
-32768	-163.84%
32766	163.83%
32767	Invalid

Default value:

5%.

UCPTstopMode / nciStopMode

Definition:

Network config input SNVT_switch nciStopMode

Explanation:

Is used to select between coast and ramp stop.

Valid range:

State	Value	Stop mode
0	0.0	Coast
1	100	Ramp

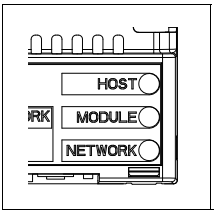
Default value:

Coast (state 0, value 0.0)

Diagnostics

LED indications

The FLON-01 module is equipped with three bicolour diagnostic LEDs. The LEDs are described below.



Name	Colour	Function
HOST	Green	Connection to host OK
	Flashing red	Establishing communication to host, or communication to host lost
MODULE	Off	Off/Initializing/Invalid
	Red	Unconfigured (with or without application)
	Yellow	Configured – offline (hard, soft or bypass)
	Flashing yellow	Configured – online (with receive timeout)
	Flashing green	Wink
	Green	Configured – online
NETWORK	Yellow	Transmitting
	Green	Receiving
	Off	Inactive

Definitions and abbreviations

BAC

Building Automation Controller

Communication Module

Communication Module is a parameter name/parameter selection name for a device (e.g. a fieldbus adapter) through which the drive/bypass is connected to an external serial communication network (e.g. a fieldbus). The communication with the communication module is activated by a parameter.

CRC

Cyclic Redundancy Check

FLON-01

A device through which an ABB drive or bypass is connected to a LONWORKS® network.

Functional profile

Functional profiles may contain one or more objects that interact to perform the required profile defined operability. The Variable Speed Motor Drive Profile contains the general LONMARK® Node Object, application-specific Variable Speed Motor Drive Object, and the Open Loop Sensor and Open Loop Actuator objects.

LonMark®

Products that conform to LONMARK® Interoperability Guidelines, defined by the LONMARK® Interoperability Association, are eligible to carry the LONMARK® logo.

LonTalk®

The communication protocol in LONWORKS® networks

LSB

Least significant bit

MSB

Most significant bit

nci

Network configuration variable

Neuron® ID

Every LONWORKS® device or – as synonym – node must have a unique ID. This is called the Neuron® ID. This ID is, on Neuron® Chip-based nodes, stored in the chip itself and cannot be changed.

nv

Network variable

nvi

Input network variable

nvo

Output network variable

Object

Object is a set of one or more network variables implemented as SNVTs with semantic definitions relating the behaviour of the object to the network variable values, in addition to a set of configuration properties. For example, the Variable Speed Motor Drive Object and the Node Object represent two types of objects.

Parameter

A parameter is an operating instruction for the drive/bypass. Parameters can be read and programmed by using the drive control panel, or through the FLON-01 module.

Service Pin

The Service Pin is used in installing the node. Pressing the Service Pin causes the LONWORKS® node to send the so-called Service Pin Message which includes, among other things, the Neuron® ID. This informs the network or installation tool about the

node. Holding the Service Pin for more than 10 seconds forces the module to "Go Unconfigured".

SNVT

Standard Network Variable Type

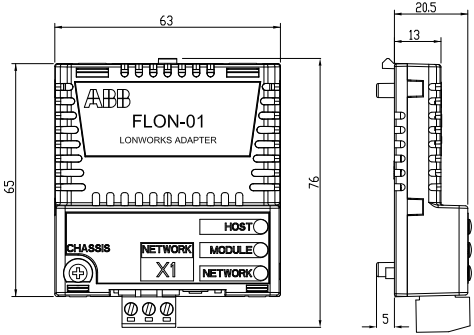
UCPT

User Configuration Property Type

Technical data

FLON-01

Enclosure:



Mounting: Into the option slot on the drive/bypass.

Degree of protection: IP20

Ambient conditions: The applicable ambient conditions specified for the drive/bypass in its manuals are in effect.

Indicators: Three bicolour LEDs (HOST, MODULE, NETWORK)

Connectors:

- 20-pin connector to drive/bypass (X2)
- 3-pole detachable screw terminal block (X1)

Power supply:

- +3.3 V ±5% max. 450 mA (supplied by the drive/bypass)

General:

- Estimated min. lifetime: 100 000 h
- All materials UL/CSA-approved
- Complies with EMC standards EN 61000-6-4:2001 and EN 61800-3
- Bus interface functionally isolated from drive/bypass

LONWORKS® network

FLON-01 compatible devices:

All devices equipped with FT-X1 and FTT-10A compatible transceivers.

Size of the network:

32385 nodes divided into 127 nodes / subnet with 255 subnets / domain.

Medium:

- Termination: 105 Ω / 52.5 Ω, depending on the network topology. See *Bus termination* on page 22.
- Cable specifications: See the following tables.

LONWORKS® network cable specifications				
	Control / signalling grade 16 AWG (1.3 mm)	**General purpose grade** 16 AWG (1.3 mm)	**Data grade level 4** 22 AWG (0.65 mm)	**JY (St) Y 2×2×0.8** 20.4 AWG (0.8 mm)
Max. DC resistance at 20 °C loop	28.2 Ω/km	28.2 Ω/km	118 Ω/km	74.0 Ω/km
Max. DC resistance unbalance			5%	
Max. mutual capacitance of a pair	58 nF/km	74 nF/km	56 nF/km	100 nF/km
Max. pair-to-ground capacitance unbalance			3.28 nF/km	
Nominal impedance	95 Ω at 1.0 MHz	100 Ω at 1.0 MHz	102 Ω ±15% at 772 kHz 100 Ω ±15% at 1, 4, 8, 10, 16 and 20 MHz	
Max. attenuation at 20 °C			15 dB/km at 772 kHz 18 dB/km at 1.0 MHz 36 dB/km at 4.0 MHz 49 dB/km at 8.0 MHz 56 dB/km at 10.0 MHz 72 dB/km at 16.0 MHz 79 dB/km at 20.0 MHz	
Pair twists per metre	20 (nominal)	20 (minimum)		5 (minimum)

LonWorks® network cable specifications				
	Control / signalling grade 16 AWG (1.3 mm)	**General purpose grade** 16 AWG (1.3 mm)	**Data grade level 4** 22 AWG (0.65 mm)	**JY (St) Y 2×2×0.8** 20.4 AWG (0.8 mm)
Cable parameters	single twisted pair stranded 19/29 unshielded Tefzel Insulation & Jacket High 150 °C max.	single twisted pair stranded 19/29 unshielded PVC Insulation & Jacket Medium 80 °C max.	twisted pair, single or multiple typically solid and unshielded	wire pair: red/black per DIN VDE 0815 4-wire helical twist solid shielded

LonWorks® network, maximum bus lengths					
		Control / signalling grade 16 AWG (1.3 mm)	**General purpose grade** 16 AWG (1.3 mm)	**Data grade level 4** 22 AWG (0.65 mm)	**JY (St) Y 2×2×0.8** 20.4 AWG (0.8 mm)
Doubly terminated bus topology	**Bus length**	2200 m	2200 m	1150 m	750 m
	Stub length	3 m	3 m	3 m	3 m
Singly-terminated free topology	**Node-to-node distance**	500 m	400 m	400 m	320 m
	Total wire length	500 m	500 m	500 m	500 m

Topology:

Supports free topology wiring, and will accommodate bus, star, loop, or any combination of these topologies.

Serial communication type:

Asynchronous, half duplex

Transfer rate:

78 kbit/s

Protocol:

LonTalk®

Documents:

LONMARK® Layers 1-6 Interoperability Guidelines, version 3.3

3AUA0000041017 REV A EN
EFFECTIVE: 01.12.2008

ABB Oy
AC Drives
P.O. Box 184
FIN-00381 HELSINKI
FINLAND
Telephone +358 10 22 11
Fax +358 10 22 22681
Internet www.abb.com

ABB Inc.
Automation Technologies
Drives & Motors
16250 West Glendale Drive
New Berlin, WI 53151
USA
Telephone 262 785-3200
800-HELP-365
Fax 262 780-5135

ABB Beijing Drive Systems Co. Ltd.
No. 1, Block D,
A-10 Jiuxianqiao Beilu
Chaoyang District
Beijing, P.R. CHINA, 100015
Telephone +86 10 5821 7788
Fax +86 10 5821 7618